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## **CLAIMS**

- 1. A multistage process for the continuous production of an emulsion comprising subjecting at least two immiscible liquids to a sequence of at least two mixing stages carried out in at least two successive stator-rotor devices, in which process:
  - a peripheral outlet from a first stator-rotor device is connected to an axial inlet in the successive stator-rotor device by means of a duct in which the Reynold number Re<sub>T</sub> inside said duct is higher than 5000, and
  - the peripheral velocity of each rotor of said stator-rotor devices ranges from 5 to 60 m/s.
- 2. The process according to claim 1, wherein said emulsion comprises, as a dispersed phase, a molten adduct of magnesium dihalide-Lewis base.
- 3. The process according to claims 1-2, wherein said emulsion comprises, as a continuous phase, any liquid which is inert and immiscible with said molten adduct of magnesium dihalide-Lewis base.
- 4. The process according to claim 3, wherein said inert and immiscible liquid is selected from aliphatic and aromatic hydrocarbons, silicone oils, liquid polymers or mixtures of said compounds.
- 5. The process according to any of claims 1-4, wherein said molten adduct of magnesium dihalide-Lewis base is fed to said first stator-rotor device at a weight ratio of less than 0,5 with respect to said inert and immiscible liquid.
- 6. The process according to any of claims 1-5, wherein in each mixing stage the residence time is of less than 1 second.
- 7. The process according to claim 1, wherein the peripheral velocity of each rotor disk is comprised in the range from 20 to 60 m/sec.
- 8. The process according to claim 1, wherein the Reynold number  $Re_T$  inside said duct is higher than 8000.
- 9. The process according to any of claims 1-8 comprising a sequence of three mixing stages.
- 10. The Process according to any of claims 1-9, wherein said magnesium dihalide is magnesium chloride.
- 11. The process according to any of claims 1-10, wherein said Lewis base is selected from amines, alcohols, esters, phenols, ethers, polyethers, aromatic or aliphatic (poly)carboxylic acids.
- 12. The process according to claim 11, wherein said Lewis base is an alcohol of formula ROH, in which R is an alkyl group containing from 1 to 10 carbon atoms.



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13. The process according to any of claims 1-12, wherein a molten adduct of formula MgCl<sub>2</sub>·mROH·nH<sub>2</sub>O is used, wherein m=0.1-6.0, n=0-0.7 and R= alkyl group C<sub>1</sub>-C<sub>10</sub>.

- 14. The process according to claim 13, wherein m=2.0-4.0, n=0-0.4 and R= ethyl group.
- 15. An apparatus for the continuous production of an emulsion comprising at least two stator-rotor devices, each stator except the last being connected with the successive stator by a duct extending from a peripheral outlet in the first stator to an axial inlet in the successive stator.
- 16. The apparatus according to claim 15, wherein the initial portion of said duct is oriented in a direction substantially tangential to the circumference of each rotor.
- 17. The apparatus according to claims 15-16, wherein the end portion of said duct is oriented in a direction substantially parallel to the rotation axes of each rotor.
- 18. The apparatus according to any claims 15-17, wherein said duct is shaped as a spiral.
- 19. The apparatus according to any of claims 15-18, wherein each rotor is perforated by one or more holes allowing the emulsion to pass from one side to the other side of said rotor.
- 20. The apparatus according to any of claims 15-19, wherein the axial tolerance between each rotor and the corresponding stator is from 0.1 to 2.0 mm.
- 21. The apparatus according to claim 20, wherein said axial tolerance is from 0.2 to 1.2 mm.
- 22. The apparatus according to any of claims 15-21, wherein the radial tolerance between the circumference of each rotor and the corresponding stator is from 0.2 to 5.0 mm
- 23. The apparatus according to claim 22, wherein said radial tolerance is from 0.5 to 2.0 mm.

